

What is claimed is:

1. A solar cell, comprising:
a solar cell device region constructed by sequentially stacking a first electrode, a
5 P-type semiconductor layer, an intrinsic absorber, an N-type semiconductor layer and a
second electrode on a substrate;
an insulating film formed on the second electrode; and
a thin film heater pattern formed on the insulating film.
- 10 2. The solar cell as claimed in claim 1, further comprising a protection film formed
on the insulating film and the thin film heater pattern to protect the thin film heater pattern
from the outside.
3. The solar cell as claimed in claim 1, wherein the intrinsic absorber is a non-doped
15 amorphous silicon layer, and the P-type and N-type semiconductor layers are amorphous
silicon layers doped with P-type and N-type impurities, respectively.
4. The solar cell as claimed in claim 3, further comprising another stacked structure
between the N-type semiconductor layer and the second electrode, the stacked structure
20 being constructed by sequentially stacking a P-type crystalline silicon layer, a non-doped
crystalline silicon layer and an N-type crystalline silicon layer one above another.
5. The solar cell as claimed in claim 4, wherein the P-type amorphous silicon layer,
the non-doped amorphous silicon layer and the N-type amorphous silicon layer are formed
25 to have thicknesses smaller than those of the corresponding P-type crystalline silicon layer,
non-doped crystalline silicon layer and N-type crystalline silicon layer, respectively.
6. The solar cell as claimed in claim 1, further comprising a device for measuring a
30 film heater pattern.

7. The solar cell as claimed in claim 6, wherein the temperature-measuring device is a thermocouple.
- 5 8. The solar cell as claimed in claim 1, wherein the substrate is formed of any one of plastic, silicon and glass.
9. The solar cell as claimed in claim 1, wherein the substrate is formed of plastic or silicon, the first electrode is formed of metal, and the second electrode is formed of a
10 transparent conducting oxide (TCO).
10. The solar cell as claimed in claim 1, wherein the substrate is formed of glass, the first electrode is formed of a transparent conducting oxide (TCO), and the second electrode is formed of metal.
- 15 11. A solar cell, comprising:
a solar cell device region constructed by sequentially stacking a P-type semiconductor layer, an intrinsic absorber, an N-type semiconductor layer and an electrode on a substrate formed of metal;
20 an insulating film formed on the electrode;
a thin film heater formed on the insulating film; and
a protection film for protecting the thin film heater from the outside.
12. A method of manufacturing a solar cell, comprising the steps of:
25 sequentially stacking a first electrode, a P-type semiconductor layer, an intrinsic absorber, an N-type semiconductor layer and a second electrode on a substrate;
forming an insulating film on the second electrode;
forming a metal layer on the insulating film, and forming a thin film heater pattern composed of the metal layer by performing photolithography;
30 forming a protection film on the insulating film and the thin film heater pattern;

forming a pair of contact holes by removing portions of the protection film above both side ends of the thin film heater pattern; and

filling conductive material into the contact holes and forming a pair of electrode pads to be electrically connected to the conductive material in the contact holes.

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13. The method as claimed in claim 12, wherein the intrinsic absorber is a non-doped amorphous silicon layer, and the P-type and N-type semiconductor layers are amorphous silicon layers doped with P-type and N-type impurities, respectively.

10 14. The method as claimed in claim 13, further comprising the step of forming another stacked structure between the N-type semiconductor layer and the second electrode, the stacked structure being constructed by sequentially stacking a P-type crystalline silicon layer, a non-doped crystalline silicon layer and an N-type crystalline silicon layer one above another.

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